

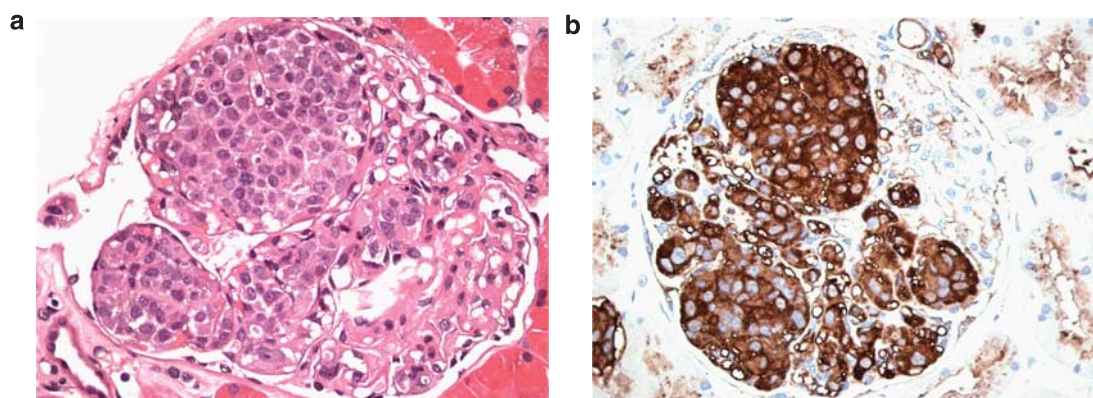
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# Intra-glomerular metastases

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**Figure 1 | Renal biopsy findings.** (a) Glomerular capillaries are distended by malignant cells with enlarged nuclei, prominent nucleoli, and moderately abundant cytoplasm (hematoxylin and eosin, original magnification  $\times 400$ ). (b) Immunohistochemical staining for chromogranin is strongly positive in the distribution of the intra-glomerular metastases (original magnification  $\times 400$ ).

A 55-year-old Caucasian man was referred for evaluation of worsening renal failure. His medical history included metastatic neuroendocrine carcinoma discovered in November 2007 when he presented with abdominal pain and an 8.5-cm unresectable mass at the root of the mesentery, surrounding the superior mesenteric artery. Fine needle aspiration revealed a neuroendocrine carcinoma with strong immunoreactivity for chromogranin, synaptophysin, and cytokeratin 20. Octreotide scan revealed bilobar liver involvement. The patient was treated with long-acting intramuscular Octreotide administered at 4-week intervals. Over the subsequent 3 years, the tumor burden and elevated serum chromogranin levels remained largely unchanged. In February 2011, the patient's serum chromogranin level doubled, and by August Octreotide scan revealed bilateral pulmonary nodules and a marked increase in liver tumor burden.

The patient's oncologic disease has been accompanied by progressive renal dysfunction including a creatinine level of 1.13 mg/dl in December 2010, 1.61 mg/dl in May 2011, 2.12 mg/dl in July 2011, and 3.09 mg/dl in September 2011. The patient has a 24-h urine protein level of 2 g/day, bland urine sediment, no evidence of hypertension or diabetes mellitus, normal complements, negative serologies, and normal-sized kidneys by ultrasound.

Renal biopsy revealed enlarged glomeruli distended by intraluminal aggregates of malignant cells (Figure 1a). Immunohistochemical staining was strongly positive for synaptophysin, chromogranin (Figure 1b), and cytokeratin 20, consistent with intra-glomerular metastases of neuroendocrine carcinoma. Intra-glomerular metastases are an extremely rare finding on renal biopsy but are more commonly encountered as an autopsy finding in patients with metastatic malignancy, most frequently carcinomas.